The Healthcare SIG continues to have a few problems, members leaving and Ken taking time out for some major surgery, we all wish him a speedy recovery. However, with the decision to recruit some new female members from the hospital fraternity we look forward to an exciting remainder to the year.

On to other matters; our last feature concerned local health problems but we note that one serious complaint may effect many of us. According to new estimates from researchers at the World Health Organization, the number of people with diabetes will double worldwide by 2030.

Taking care of ourselves becomes more critical as we get older and a vital organ which we may neglect is our heart. There follows some interesting facts.

A Healthy Heart:

How It Works.

Your heart is an amazing organ. It continuously pumps oxygen and nutrient-rich blood throughout your body to sustain life. This fist-sized powerhouse beats (expands and contracts) 100,000 times per day, pumping five or six quarts of blood each minute, or about 2000 gallons per day.

How Does Blood Travel Through the Heart?

As the heart beats, it pumps blood through a system of blood vessels, called the circulatory system. The vessels are elastic tubes that carry blood to every part of the body. Blood is essential. In addition to carrying fresh oxygen from the lungs and nutrients to your body's tissues, it also takes the body's waste products, including carbon dioxide, away from the tissues. This is necessary to sustain life and promote the health of all the body's tissues.

There are three main types of blood vessels:

- **Arteries.** They begin with the aorta, the large artery leaving the heart. Arteries carry oxygen-rich blood away from the heart to all of the body's tissues. They branch several times, becoming smaller and smaller as they carry blood farther from the heart and into organs.

- **Capillaries.** These are small, thin blood vessels that connect the arteries and the veins. Their thin walls allow oxygen, nutrients, carbon dioxide and other waste products to pass to and from our organ's cells.

- **Veins.** These are blood vessels that take blood back to the heart; this blood lacks oxygen (oxygen-poor) and is rich in waste products that are to be excreted or removed from the body. Veins become larger and larger as they get closer to the heart. The superior vena cava is the large vein that brings blood from the head and arms to the heart, and the inferior vena cava brings blood from the abdomen and legs into the heart.

This vast system of blood vessels — arteries, veins and capillaries — is over 60,000 miles long. That's long enough to go around the world more than twice!

Where Is Your Heart and What Does It Look Like?

The heart is located under the rib cage, to the left of your breastbone (sternum) and between your lungs. Looking at the outside of the heart, you can see that the heart is made of muscle. The strong muscular walls contract (squeeze), pumping blood to the arteries. The major blood vessels that enter the heart are the aorta, the superior vena cava, the inferior vena cava, the pulmonary artery (which takes oxygen-poor blood from the heart to the lungs where it is oxygenated), the pulmonary vein (which brings oxygen-rich blood from the lungs to the heart) and the coronary arteries (which supply blood to the heart muscle).

On the inside, the heart is a four-chambered, hollow organ. It is divided into the left and right side by a muscular wall called the septum. The right and left sides of the heart are further divided into two top chambers called the atria, which receive blood from the veins, and two bottom chambers called ventricles, which pump blood into the arteries.

The atria and ventricles work together, contracting and relaxing to pump blood out of the heart. As blood leaves each chamber of the heart, it passes through a valve. There are four heart valves within the heart:

- Mitral valve
- Tricuspid valve
- Aortic valve
- Pulmonic valve (also called pulmonary valve)

The tricuspid and mitral valves lie between the atria and ventricles. The aortic and pulmonic valves lie between the ventricles and the major blood vessels leaving the heart.

The heart valves work the same way as one-way valves in the plumbing of your home. They prevent blood from flowing in the wrong direction.

Each valve has a set of flaps, called leaflets or cusps. The mitral valve has two leaflets; the others have three. The leaflets are attached to and supported by a ring of tough, fibrous tissue called the annulus. The annulus helps to maintain the proper shape of the valve.

The leaflets of the mitral and tricuspid valves are also supported by tough, fibrous strings called chordae tendineae. These are similar to the strings supporting a parachute. They extend from the valve leaflets to small muscles, called papillary muscles, which are part of the inside walls of the ventricles.

How Does Blood Flow Through the Heart?

The right and left sides of the heart work together. The pattern described below is repeated over and over, causing blood to flow continuously to the heart, lungs and body.

Right side

- Blood enters the heart through two large veins, the inferior and superior vena cava, emptying oxygen-poor blood from the body into the right atrium.
- As the atrium contracts, blood flows from your left atrium into your left ventricle through the open mitral valve.
- When the ventricle is full, the mitral valve shuts. This prevents blood from flowing backward into the atrium while the ventricle contracts.
- As the ventricle contracts, blood leaves the heart through the aortic valve, into the aorta and to the body.

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